STATE OF MISSOURI
Mel Carnahan, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
P.O. Box 250 111 Fairgrounds Rd. Rolla, MO 65402-0250
(573) 368-2100
FAX (573) 368-2111

June 6, 2000

40331953
Superfund

Mr. Mathew Kingsley
Bridgeton Landfill LLC
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: Preliminary Investigation of the Proposed Bridgeton Landfill Expansion Site. (Section 34 E., T. 47 N., R. 5 E., St. Charles Quadrangle, St. Louis County)

Dear Mr. Kingsley:

The staff of the Geological Survey Program (GSP) has completed the preliminary site investigation for the proposed horizontal expansion of the Bridgeton Landfill.

The proposed expansion is in an area that is largely underlain by Missouri River alluvium. This unit is a regional aquifer that has the potential to produce substantial quantities of potable groundwater and is an important source of water to the public and industry. No natural barrier exists between the proposed expansion and the regional aquifer. Because there is no natural safeguard to protect this resource, the horizontal expansion is disapproved per 10 CSR 80-2.015. Additional geohydrological exploration for the purpose of siting a solid waste disposal area is not recommended at this location.

If you would like to discuss any of the comments above, we would encourage you to call us at (573) 368-2161.

Sincerely,

DIVISION OF GEOLOGY AND LAND SURVEY

James W. Duley
Acting Program Director
Geological Survey Program
nrduleb@mail.dnr.state.mo.us

STATE OF MISSOURI
JAMES W. DULEY
RG0311
REGISTERED GEOLOGIST
6-6-2000

c: SWMP, MODNR
SLRO, MODNR
SWMD, Mr. David Berger

Mtg in Rolla at DGLS next Thurs

ID #: 029-00

SOLID WASTE DISPOSAL SITE - GEOLOGIC EVALUATION
MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY - GEOLOGICAL SURVEY PROGRAM (GSP)
P.O. BOX 250, ROLLA, MO 65402 (573)368-2161

1. **PROJECT:** BRIDGETON LANDFILL LLC **COUNTY:** ST. LOUIS

2. **LOCATION:** Survey #131, SEC34, T47N, R5E, QUAD: ST. CHARLES

3. **LATITUDE:** 38 Deg, 46 Min, 10 Sec **LONGITUDE:** 90 Deg, 26 Min, 48 Sec

4. **OWNER:** BRIDGETON LANDFILL LLC, 13570 ST. CHARLES ROCK ROAD, BRIDGETON, MO 63044 - 314/739-1919

5. **REQUESTED BY:** MATT KINGSLEY, 13570 ST. CHARLES ROCK ROAD, BRIDGETON, MO 63044 - 314/739-1919

6. **DATE OF FIELD VISIT:** 04/25/00

7. **TOPOGRAPHY:** 0-4% X, 4-8% X, 8-15% X, Greater than 15% X.
   ON: Broad Upland X, Ridgetop ___, Hillslope ___,
   Narrow Ravine ___, Floodplain X, Terrace ___,
   Alluvial Plain ___, Other X.

8. **BEDROCK:** The proposed landfill expansion straddles two distinct geomorphic regions. The eastern portion of the expansion is located on the periphery of a broad upland and is underlain by Mississippian System carbonates of the St.Louis and Salem Formations and the Warsaw Shale. The base of the current landfill is located within the Salem Formation. (cont.)

9. **OVERBURDEN (Soil):** Not applicable (see remarks). Material for construction of the liner and cover has been stockpiled from off-site sources. Additional cover material would be required as needed.

10. **SITE HYDROLOGY:** Most of the proposed landfill expansion would be over a regional aquifer, the Missouri River alluvial aquifer. No natural barrier exists between the proposed expansion and the alluvial aquifer. Groundwater flow within the bedrock is predominantly through fractures and solution features. The existing landfill is located within a quarry. During its construction, numerous seeps and a large spring were (cont.)

11. **GROUNDWATER OF CONCERN:** Perched ___, Local X, Regional X
    IN: Overburden X, Bedrock X.

12. **THIS REPORT COMPLETED USING THE FOLLOWING GSP FILES AND/OR DATABASES:**
    DATABASES: Losing stream X, Water Tracing X, Cave X, Spring X,
    Well Information Management System (WIMS) X.
    LOGS: Drillers's X. Core X, Subsurface X.
    MAP FILES: Geological (bedrock) X, Surficial Materials X, Mine X.
    OTHER FILES (specify): Bridgeton landfill file, Bridgeton DSI, Groundwater monitoring plan

ID #: 029-00

13. RESULTS OF PRELIMINARY INVESTIGATION: Approval ___, Disapproval X .

14. FURTHER EXPLORATION NOT RECOMMENDED DUE TO UNSUITABLE CONDITIONS: Hydrological X , Collapse ___, Bedrock ___, Soil ___.

15. REMARKS:

8. BEDROCK (cont.) - Drill logs indicate the depth to the Salem Formation ranges from 115 to 165 feet and has a thickness of 67 to 83 feet. The overlying St. Louis Formation is encountered at depths ranging from 14 to 53 feet on the eastern edge of the current sanitary landfill and 30 to 110 feet along the western edge. The St. Louis Formation ranges from 63 to 130 feet thick. The western portion of th expansion is located within the Missouri River floodplain and is underlain by alluvium. Drill logs along the western edge of the current landfill indicate an alluvial material thickness of 10 to at least 110 feet.

10. SITE HYDROLOGY (cont.) - reported within the quarry high wall. The natural direction of groundwater flow is generally towards the Missouri River. Pumping of leachate from the existing landfill has caused an artificially-induced inward gradient toward the landfill. This creates a groundwater divide across the proposed expansion area.

15. REMARKS - The proposed landfill expansion includes areas that have been previously used for waste disposal. Existing within the proposed footprint are a former demolition landfill, an inactive landfill, and two areas containing low-level radioactive waste (also known as Operable Unit 1, Areas 1 and 2). If contamination were detected by the monitoring system, it would be difficult to determine from which area the contamination originated.

Monitoring of the proposed site expansion would be complicated; portions of the site are in two different yet connected aquifers (alluvial vs. bedrock). Much of the bedrock portions of the site would not have downgradient monitoring points and the alluvial portions would not have any upgradient monitoring points due to the artificially-induced groundwater divide. Intra-well statistical analysis of the site would be complicated due to the wastes already in place.

The most important hydrological aspect of the proposed expansion is the lack of a natural barrier to protect the Missouri River alluvial aquifer. This aquifer has the potential of producing a sufficient quantity and quality of groundwater for use as a public or industrial water supply. Because there is no natural safeguard to protect this resource, the lateral expansion is denied.

IF "APPROVAL" IS CHECKED ABOVE, THE APPLICANT MUST SCHEDULE A MEETING WITH GSP TO DISCUSS THE REQUIRED ELEMENTS OF A DETAILED SITE INVESTIGATION WORKPLAN PRIOR TO FURTHER INVESTIGATIONS. IF "DISAPPROVAL" IS CHECKED ABOVE, NO ADDITIONAL EXPLORATION SHOULD BE CONDUCTED UNTIL FURTHER NOTICE.

22. REPORT BY: _____,
David R. Erickson, Geologist

23. CC: Matt Kingsley; DEQ, SWMP

STATE OF MISSOURI
JAMES W. DULEY
PG0311
REGISTERED GEOLOGIST
6-6-2000

Date: 05/31/00